Motivation Among NASA Government Contractors

by

Yadira Garcia, B.S.

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Approved by
Supervising Committee:

Robert B McCann

Kyle Lewis

Abstract

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Supervisors: Robert B McCann and Kyle Lewis

There are many government standards and regulations that even contractors must follow. This makes it difficult for contracting companies to have the same incentives that other private companies provide for their employees that keeps them motivated. A survey was conducted among NASA government contractors, mainly Engineering and Science Contract Group (ESCG) contractors to get their perspective on the work motivation they have working in the space industry. This report will discuss some of the motivation theories proposed in industrial psychology as well as the benefits offered by ESCG and will be compared with the results from the survey. Lastly there will be recommendations on how to improve the benefits offered or lack thereof by ESCG that could improve the motivation in the workplace.

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1 INTRODUCTION

People have questioned from time to time what it is that motives National Aeronautics and Space Administration (NASA) government contract employees. It has definitely been a challenge working for the National Aeronautics and Space Administration-Johnson Space Center (NASA-JSC) as a contractor throughout the past four plus years. Though there are some perks of working for a private company when one works as a NASA contractor there is still a lot of direct visibility by this government sector, which includes direction of the work being performed. There is also the conception that the government, that is NASA, is always a step behind due to the outdated hardware/software it works with. During the spring semester of 2009 I was enrolled in Managing People and Organizations. In this class there was a lecture on motivation where some motivational theories were presented. Working in the space industry as a government contractor I was intrigued to see if these theories would apply to people in this industry. I conducted a survey among colleagues and peers who work for NASA as a contractor to get an idea of what motives them. The feedback from the survey was mainly from people employed under the Engineering and Science Contract (ESC), which will later be described in a different section. Before discussing the results of the survey there will be some background on NASA contracts explained as well as some of the motivational theories that have been proposed in the industrial psychology field. A detail

explanation of the benefits offered by Jacobs Engineering will follow as ESC will be the main focus of the report. Lastly recommendations will be given to ESCG on how employees could be or stay motivated based on the theory's propositions mentioned in the report and the benefits that they currently offer.

2 BACKGROUND

NASA uses a variety of contract types to contract work out to different companies. These contract types are outlined in detail within the Federal Acquisition Regulation (FAR). The preferred way to contract with NASA for services and hardware is via a Performance-Based Contract (PBC). Performance-based contracting is contracting for results, not just best efforts, and involves structuring an acquisition around the purpose of the work to be performed (GSA: FAR). A PBC specifies performance requirements and standards in order to determine whether the performance requirements are being met. Additionally, some type of performance incentive (positive and/or negative) may also be included. PBC contract performance requirements should be described in terms of “what” the required output is and should not specify "how" the work is to be done. A PBC also includes a surveillance plan that documents NASA’s role in monitoring the contractor’s performance and ensure that taxpayer dollars are spent wisely. The level of surveillance contained in the plan is typically commensurate with the risk associated with the work.

The difference in the contracts is how much risk the contractor will or could assume. Typically NASA would prefer to award firm-fixed-price (FFP) contracts where the contractor assumes all cost risk. However, due to the size of the different companies NASA contracts it usually is not able to award only FFP contracts. Table 1 shows the different contract types and the level of risk the contractor would assume, where CPFF is cost-plus-fixed-fee, CPAF is cost-plus-

award-fee, CPIF is cost-plus-incentive-fee, FPI is fixed-price incentive, FPAF is fixed-price with award fee, and FFP is firmed-fixed-price contract (US Government AFCG). For the purposes of this report I will not go into detail of the differences in each one of the contracts spelled out in the US Government Award Fee Contracting Guide.

Table 1: Contract Types and Associated Risk (US Government AFCG)

Minimum Cost Risk to Contractor					Maximum Cost Risk to Contractor
CNF & CPFF	CPAF	CPIF	FPI	FPAF	FFP

Jacobs Engineering was awarded the ESC by NASA in February of 2005. This contract includes cost-plus-award-fee (CPAF), indefinite delivery indefinite quantity (IDIQ), and level-of effort (LOE) components (ESCG-3300-06-CON-WI-0025). The CPAF includes an estimated cost and an award fee amount that is paid based on periodic evaluations of the contractor performance. CPAF contracts offer evaluation flexibility, taking into consideration both contractor performance levels and the conditions under which such levels were achieved (US Government AFCG). Large development contracts offer relatively large monetary incentives to the prospective contractor. However, because the uncertainty/risk associated with the work is shared between NASA and the contractor, large aerospace companies like Jacobs Engineering are best suited to CPAF contracts because they have the financial and technological resources

available to effectively mitigate the risk inherent in such large development projects.

Though Jacobs Engineering is the primary contractor that was awarded the ESC, there are five other teammate subcontractors under the contract that that share the ESC management (ESCG-3300-06-CON-WI-0025). Those five teammate companies are Barrios, ERC, Geo Control Systems, Hamilton, and MEI Technologies.

All ESCG contractors sit at the Jacobs Engineering facilities or at the NASA-Johnson Space Center facilities regardless if they were hired by Jacobs Engineering or one of the other five teammate contractors. Therefore, there could be two engineers working on the same project but working for two different companies. However, everyone is issued an ESCG badge and can only be distinguished by the contract they are working on while at NASA and not the company that issues them their payroll check.

Though every employee under a certain contract may not necessarily work for the same company they all still have the same purpose in the work they do, which is to provide NASA with quality products that are on time and on budget. This also means that each contract specifies the quantity or will specify the quantity of each product that has to be delivered throughout the life of the contract. Therefore, there is not a sales quota that contractors are aiming for when it comes to deliverables that keeps them motivated. Everyone is assigned a task to be completed in a certain amount of time and under an estimated

budget. What then is it that keeps contractors motivated? Following are some of the motivational theories proposed in the industrial psychology field. They could be applied for other life matters (e.g. relationships) just as they have been applied in the work industry. Perhaps these theories can give an explanation of what keeps NASA government contractors motivated.

3 MOTIVATIONAL THEORIES

What is work motivation? From Dr. Lewis' lecture it was defined that work motivation is "The psychological forces that determine the direction of a person's behavior in an organization, a person's level of effort, and a person's level of persistence" (4). There are numerous theories that have been proposed in the industrial psychology field and can be found in Smith and Hitt "Great Minds in Management," two of which were discussed in Management of People and Organizations. These two theories along with a third theory discussed in Management of People and Organizations were the theories I sensed could be applied to NASA government contractors. This of course does not mean that other theories could not apply. However, I will emphasize these three theories, which are Goal Setting Theory, Equity Theory, and Expectancy Theory.

3.1 Goal Setting Theory

Goal Setting Theory is a theory presented by Edwin A Locke and Gary P Latham in 1990 (Smith and Hitt 146). It took them twenty-five years of research before presenting their theory (Smith and Hitt 146). The theory states that setting goals motivates people to perform at a high level. Unlike behaviorists, Locke believes that our ideas affect our actions. Behaviorists believed that human action is controlled by the environment without reference to the consciousness; however, Locke believed that an examination of one's own thoughts and feelings can affect our actions (Smith and Hitt 131). Many professional industries set goals and/or ask employees to set goals annually. Locke and Latham's research

consisted of people's performance on the basis of setting goals (Smith and Hitt 146). After completing their research, which consisted of both laboratory and field experiments, they concluded to the following.

> 1) Performance goals lead to the highest level of performance when they are both clear (specific) and difficult than easy or vague goals, such as trying to "do your best."
> 2) People need feedback regarding their progress in order to see if they are "on target."
> 3) People must be committed to them; they must be "real" goals.
> 4) Commitment is highest when people have confidence in being able to reach their goal and believe the goal to be important or appropriate. (129)

In essence they claim that goals that are set must be specific (i.e. complete these five tasks by the end of the quarter) as oppose to just saying "do your best." They must also be difficult. The reason for this is that if people set easy goals they will not put much effort in accomplishing the goals and therefore have a low work performance. Also, the more difficult the goal the more commitment one will have in accomplishing the goal. However, not only does the goal need to be difficult in order for one to be committed but one must also be confident that they have the ability and knowledge to achieve the goals they have set (Locke 118). As one of Locke's findings in "Motivation Through Conscious Goal Setting" says, high commitment to goals is attained when (a) the individual is convinced that the goal is important; and (b) the individual is convinced that the goal is attainable (or that, at least, progress can be made toward it) (119). In some of the studies that Latham and Yukl examined in "A Review of Research on

the Application of Goal Setting in Organizations," they found that hard goals lead to greater performance than do easy goals, as long as they are accepted (835).

This leads to the question whether management should set goals for their employees or whether employees should set their own goals. Though Locke believes that self-set goals can be effective they may not always be set as high as another person would have set them (119). Having Management by Objectives (MOB) could be effective, that is management setting goals for employees. However, they could only be effective if employees accept them and commit to them, more like a joint goal setting (i.e. participation by supervisor and subordinate) (Locke 119). A supervisor cannot just set goals for their employees and tell them to do them without giving them an explanation as to why those goals were set for them. Employees will also have a higher commitment to goals set by their supervisors if there is effective leadership. Below are leadership techniques Locke believes could enhance commitment from employees.

- Providing and communicating an inspiring vision for the company or organization
- Acting as role model for the employees
- Expecting outstanding performance
- Promoting employees who embrace the vision and dismissing those who reject it
- Delegating responsibility ("ownership") for key tasks; goal setting itself can be delegated for capable, responsible employees
- Expressing (genuine) confidence in employee capabilities
- Enhance capabilities through training
- Asking for commitment in public (119)

Goal setting could be motivating if the proper approach is taken to set these goals. It not only involves setting the goals that are specific and difficult

but they have to be followed by feedback and guidance that they are achievable whether it's through training or expressing confidence in ones employees or maybe even doing both.

3.2 Equity Theory

Equity theory was proposed by J. S. Adams in 1963 (Pritchard 176). There are four propositions to the theory and are as follows:

> **Proposition I**: Individuals will try to maximize their outcomes (where outcomes equal rewards minus costs).
>
> **Proposition IIA**: Groups can maximize collective reward by evolving accepted systems for equitably apportioning resources among members. Thus, groups will evolve such systems of equity, and will attempt to induce members to accept and adhere to these systems. **Proposition IIB**: Groups will generally reward members who treat others equitably, and generally punish (increase the costs for) members who treat others inequitably.
>
> **Proposition III**: When individuals find themselves participating in inequitable relationships, they will become distressed. The more inequitable the relationship, the more distress individuals will feel.
>
> **Proposition IV**: Individuals who discover they are in an inequitable relationship will attempt to eliminate their distress by restoring equity. The greater the inequity that exists, the more distress they will feel, and the harder they will try to restore equity.
> (Walster, Walster, and Berscheid 6)

The theory can be given by the following equation:

$$\frac{O_A}{I_A} = \frac{O_B}{I_B}$$

Where O is the outcome and I is the input,
A = Individual and B = Referent
(Lewis 17)

Inputs are anything that a person values as putting in or investing in a relationship and outcomes are anything that a person receives in return for their

investments that is of value to them (Pritchard 177). In the workplace employees tend to make social comparisons. Referent is a person or group of people an individual will compare themselves with.

To give a more simple explanation of the theory's propositions, Walster et al. explains that is inevitable to say proposition I is basically saying that men are selfish and will do their best to maximize their outcomes (7). Proposition IIA is stating that people will set rules as to how resources (i.e. outcomes) should be distributed among a group so that there is equity. The main purpose of setting these rules is so that no one feels that they have been short changed. In other words people have a sense of egotism in getting their equal share of the pie. Proposition IIB is just what is states. The question is, "what is equitable"? This can definitely differ among societies. As Walster et al. states, some societies feel that "All men are created equal," and therefore everyone should receive equal parts of the resources; some societies believe that if you come from a well-known family line you are entitled to a larger part of the resources; and other societies believe that the more you invest the more resources you deserve (9). Below is the formula that defines Proposition IIB:

$$\frac{\left(O_A - I_A\right)}{\left(\left|I_A\right|^{k_A}\right)} = \frac{\left(O_B - I_B\right)}{\left(\left|I_B\right|^{k_B}\right)}$$

Where O is the outcome and I is the input
A = person examining the relationship
B = is the other person
k = the sign of the inputs (i.e. positive or negative)
(Walster, Walster, and Berscheid 10)

Again Proposition III is self explanatory, people become distressed when they are in an inequitable relationship or situation. What I found confusing though is that here the authors state that being unrewarded or over-rewarded are both considered inequitable, and regardless whether the person is being unrewarded or over-rewarded they both become distressed. I have to say that I agree with critics who firmly believed that people who are faced with inequity due to being over-rewarded should not be distressed. However, there was an experiment conducted confirming that people do in fact become distressed when there is inequity due to being over-rewarded. Proposition IV simply states that when people are distressed due to inequity they try to restore equity to do away with the distress. Walster et al. states that restoring equity can be done by restoring actual equity, that is lowering ones inputs or employer's outcomes or raising ones outcomes or employer's inputs; or by restoring psychological equity by convincing oneself that their relationship with his/her employer is equitable (18-19).

Equity Theory is more relevant to financial compensation. The motivation in this theory comes when there is inequity. By nature people tend to compare their outcome/input ratio to others (Pritchard 177). When they sense inequity because their outcome/input ratio is lower than the people they compare themselves with they are motivated to restore equity. As mentioned earlier, this could be by changing how much they invest (i.e. inputs) or they can also just change the people they are comparing themselves with. Sometimes the only

way to restore equity is to change employer or if the person they are comparing themselves with (i.e. referent) changes employer (Pritchard 178).

3.3 Expectancy Theory

Victor H Vroom first wrote about Expectancy Theory back in 1964 in his book "Work and Motivation." Vroom's reason for writing about Expectancy Theory in his book was to attempt to create order among findings of why people choose the profession they do, the satisfaction they get from their work, and the quality of the work they perform (Smith and Hitt 239). In "Work and Motivation," Vroom mentions that most current concepts of motivation at that time originated from the principle of Hedonism. Hedonism assumes that people's behaviors are directed toward pleasure or happiness and away from pain. However, Vroom felt that this principle had no empirical content and was un-testable (10). In other words it wasn't clear as to what events were considered pleasurable or painful, it was not clear as to how people acquired their concept of attaining pleasure or pain, and how the sources that produced pleasure or pain could be changed by experience (Vroom 10).

The elements of Expectancy Theory or VIE Theory are valence, instrumentality, and expectancy. His first proposition is given by the following equation:

$$V_j = f_j\left[\sum_{k=1}^{n} V_k I_{jk}\right] \qquad (j = 1 \ldots n)$$

$$f_j^{'} > O;\ iI_{jj} = O$$

where V_j = the valence of outcome j

I_{jk} = the cognized instrumentality
(-1 ≤ I_{jk} ≤ 1) of outcome
j for the attainment of outcome k (17)

Valence is the affective orientation toward particular outcomes (Vroom 15). In other words, how much does a person value the outcome? There could be negative valence (-1) or positive valence (+1). There are also instances where a person feels apathetic about attaining a particular outcome (zero valence). Instrumentality is "the degree to which the person sees the outcome in question as leading to the attainment of other outcomes," (Mitchell 1054). His second proposition is given by the following equation:

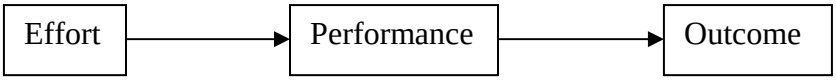
$$F_i = f_i\left[\sum_{j=1}^{n}\left(E_{ij}V_k\right)\right] \quad (i = n+1\ldots m)$$

$f^{'} = O : i \cap j = \Phi, \Phi$ is the null set

where F_i = the force to perform act *i*
E_{ij} = the strength of the expectance (O ≤ E_{ij} ≤ 1)
that act *i* will be followed by outcome *j*. (Vroom 18)

Expectancy is a person's belief of the probability of attaining an outcome due to a certain behavior and ranges from zero to one (Vroom 17). Expectancy is a perceived probability as opposed to instrumentality which is a perceived correlation that ranges from -1 to +1 (Mitchell 1054).

Expectancy Theory describes how the links of the motivation equation below occur (Lewis 31-32).



(Lewis 31)

Expectancy is the probability that the extent of effort will lead to performance; instrumentality is how closely linked are performance to outcomes or how confident a person is that they will receive a reward if they perform well; and valence is how much does that person value the reward.

Though Expectancy Theory has been applied to why people choose the profession they do, the satisfaction they get from their work, and the quality of the work they perform as previously mentioned, Vroom felt that the most attention was given to work performance. Some examples of this could be the effort an employee will put in their current work or project to obtain a more important project next time they are assigned another project. Another example could be the effort an employee puts towards his/her job duties in order to receive an exceptional score during evaluation time and receive a higher pay raise. One last example would an employee going above and beyond his/her duties to be recognized or receive an award at the end of the project.

4 ESCG BENEFITS, COMPENSATION, AND INCENTIVES

The theories previously discussed referred to training, compensation, and rewards among other outcomes that employees would find of value. There are of course the standard benefits that the average companies offer such as medical, dental, and vision insurance; 410K package; and life insurance. There are however, other extra benefits/incentives that could play a part in employees' motivation in the workplace. Before the survey results are discussed I would like to discuss some of these benefits/incentives that are offered by Jacobs or ESCG. Some of these benefits were mentioned in the survey that was conducted. The purpose is to link the benefits to the theories discussed and the motivation or lack thereof expressed by NASA government contractors.

4.1 Compensation

Jacobs Engineering sets their job classifications according to the U.S. Department of Labor contract Standard Labor Categories (SLC) for both Exempt and Non-Exempt employees. Exempt employees are all professional employees and Non-exempt employees are all hourly wage employees. Tables 2 and 3 show all the SLCs and Jacobs Engineering mapped job classifications for exempt employees. As can be seen under each SLC there are one to six different Jacobs Engineering job categories. These categories are used to determine all exempt employees' salaries upon being hired. Employees must meet the minimum requirements for each SLC to be placed in that particular classification. However, it is not guaranteed that an employee will be placed in that particular

SLC just by meeting the minimum requirement (ESCG Portal: HR Compensation). There are three factors that determine whether an employee could be moved to the next SLC and are listed below.

1) Meet the minimum requirements of the SLC requirement (education, experience, and capacity to perform at the said level)
2) Evaluation of performance in current role
3) Position availability

(ESCG Portal: HR Compensation)

In order to gain experience an employee must assume a certain amount of responsibilities. In time employees can feel confident enough to assume more responsibilities in their position. This can also be achieved by continued education and training, which will be discussed in the next section. Once employees have sufficient experience and are confident to take on new challenges they are certainly encouraged to seek a position with higher responsibilities. There is an internal ESCG job posting site that can be monitored for promotions or other job opportunities. This allows ESCG employees to find opportunities in which they will acquire new skills and also increase their financial compensation if applicable.

4.2 Tuition Assistance

Jacobs Engineering does offer tuition assistance to employees who choose to pursue a higher education and have been with the company for at least 12 months. The maximum amount that could be reimbursed in a calendar year is $3500. There are some conditions to being reimbursed for tuition which are listed below.

1) Courses must be related to the field in which the employee is working, expected to work, or could be promoted into.
2) The program is designed to encourage employees to increase their capabilities by the company making a contribution toward the cost of tuition.
3) If an employee resigns or is discharged they will not get reimbursed for any courses they are enrolled at that time. If they are transferred to another location or are laid off they will be reimbursed for courses they are enrolled at that time.
4) Courses must be taken from an accredited institution.
5) Employees must earn a grade of C or above or P in thesis/dissertation courses.
6) Courses repeated to raise a grade will not be reimbursed
7) If professional engineer review courses are taken during normal business hours, time must be made up during the same week.
8) If an employee voluntarily terminates employment with the company all funds paid for tuition during the previous twelve months must be reimbursed to the company the day of termination.

(ESCG Training and Education Policy)

Employees are reimbursed after they have completed the course and submitted an official grade sheet. However, prior to beginning any courses form F3205B must be submitted for pre-approval of reimbursement by one's manager. Any funds granted for tuition is reported as additional income and therefore, the employee is responsible for paying taxes on this additional income. That is after taxes one does not get the full $3500 a year to go toward tuition.

4.3 Training

There are different types of training at ESCG. Each employee must annually sign and submit a Personal Training Plan, form ESCG 122, along with their Goals and Objectives at the beginning of the year. From ESCG 122 lists all the mandatory training that every ESCG employee must take regardless of what department they work in. Some of the training is New Hire Orientation, Annual

Health & Safety Training, Ethics, Harassment, and JSC Basic IT Security to name a few.

Each department within the ESC also has a training and certificate plan, for example document ESCG-4000-06-SEAS-DOC-0003 is the Engineering and Science Contract Group (ESCG) Scientific, Engineering, and Analytical Services (SEAS) Department Training and Certification Plan. Each plan states the formal training that each employee in that department must take along with certification training and other trainings as seen fit for one's tasks. This could be training for employees who have to handle hazardous materials or who handle pressure systems. There is often more task specific training for some groups compared to others depending on the position and task an employee is performing, for instance a person that is hired as a project engineer will not get as much training specific to the task they will be performing as a person who is hired as a systems engineer who does have to go through formal training and certification before they can officially complete any tasks in that group.

All ESCG employees also have the ability to take any training they see fit for their position outside of what is offered through Jacobs Engineering whether it is for technical enhancement, professional development, or certification/recertification purposes. There are several ways to go about taking training outside of Jacobs Engineering.

One of the most convenient ways of taking off site training is through SATERN. SATERN is a JSC training program. SATERN offers both computer-

based courses and class setting courses. All Jacobs Engineering employees as NASA contractors are eligible to take any STAERN courses as long as they are approved by their section manager. ESCG has a certain amount allocated for employees to take SATERN courses without Jacobs Engineering being charged for them. Registration and approval is all web-based. Therefore, all an employee must do once they get verbal approval from their section manager is to sign up on-line for the course they wish to take.

Another way is for an employee to find training courses through other centers (e.g. local universities or private companies). If employees choose to go that route they must again get pre-approval from their section manager via form ESCG 117. With this route an employee must pay upfront for registration, travel, and lodging accommodations. Upon completion the employee must submit signed form ESCG 117 with management and human resource approval along with an ESCG Travel Reimbursement form ESCG 144 in order to get reimbursed for the course and any other expenses incurred from taking the training.

Finally a last option for outside training is to use the tuition reimbursement assistance offered by the company. However, if an employee chooses to go this route they must follow all the conditions under that benefit. For each of these options just mentioned an employee must coordinate with their section manager as far as the time they take off to take any training. Because ESC is a NASA contract each employee must charge their time to charge code for the project they work under. There are times when the customer sees the training useful

enough for the task they are performing that they do not mind a contractor charging to the project code for training. However, if a contractor cannot or does not get approval to charge to the project code they must take the training during their own personal time or make up the time taken off if the training is only offered during normal business hours.

4.4 Award Fee

As mentioned in section 2 ESC has a cost plus award fee component. The contract will typically include an evaluation plan detailing how award evaluation decisions will be made by the designated Fee Determination Official (FDO). Table 4 shows and example of an award fee evaluation. The contract will also include an evaluation plan detailing the award reporting schedule and structure. Table 5 shows a performance evaluation schedule that is typically included in the contract.

Document ESCG-3000-06-BMO-PO-0065 states that ESC will consist of ten periods that are 6 months in length except for the first and last period which are eight and four months in length respectively. ESC policy is that the award fee will be shared with employees when ESC earns an overall score greater than 90 percent. Anything above 90 percent will be distributed among all ESC employees up to a maximum of $500 per employee. In order to be eligible to receive an award fee distribution an employee must meet the following criteria:

1) Employed at the time of distribution
2) Employed at the end of the payable award fee period
3) Employed for a minimum of 1 month during the award fee period. (ESCG-3000-06-BMO-PO-0065)

Employees who were hired after the award fee period began or who are part-time/modified full-time employees will receive a prorated share.

4.5 Employee Awards Program

ESCG has numerous of awards that are eligible to both Jacobs Engineering and teammate company employees. The awards of small value consist of Treasure Chest Awards which are given by employees to other employees and is a company logo items with a value of no more than $5; Spot Awards given by section managers and is a $25 gift certificate to any vendor on the ESCG gift certificate vendor list; and the Safety Gold Dollar given by any employee and is a safety gold dollar coin.

There are also Department Quarterly Awards. Any ESCG employee can submit a nomination to be reviewed and selected by the department directors. The award consists of $200 for individuals and $100 per employee for a team nomination along with a certificate letter from the department director and recognition of each award winner is published in the company's monthly news letter. There are a total of nine awards issued per quarter.

ESCG Quarterly Awards are awards reviewed and given by the awards committee. Again any ESCG employee can submit a nomination. The award consists of $200 for individual and $100 per employee for a team nomination; certificate letter presented at the quarterly award ceremony; and recognition published in the company's monthly news letter. Each quarter there are three individual awards and three team awards issued.

At the end of the year the company holds an Annual Banquet in which Annual Awards are presented. There are fourteen individual and two team categories along with 1st, 2nd, and 3rd place technical paper awards issued. The awards range from $100 to $500 depending on the category and whether it's an individual or team award. All nominees are invited to the banquet free of charge and recognition is published in the company's monthly news letter.

There are other awards that ESCG employees are eligible for and are awarded by NASA-JSC. Some are monetary awards and others are just recognition awards. ESCG also recognizes these award winners in the company's new letter. Regardless of the type of ESC award that is given, all nominations must be submitted through the ESCG Employee Awards Program website with a written and understandable explanation of what the person or team did that was out of the ordinary in order to be considered.

5 SURVEY

With all the benefits mentioned in the previous section one would think that ESCG employees were highly motivated in the workplace. I conducted a survey among ESCG employees and other NASA government contractors to see if that was the case. Appendix D illustrates the survey that was passed among colleagues and peers. It consisted of seventeen questions on motivation emphasizing on Goal Setting, Training, Tuition Assistance, and Monetary Incentives & Recognition Awards. There were forty-two employees that responded to the survey, eleven of which work under an ESC teammate contractor, and three of which were non-ESCG NASA contractors. The job positions of the respondents varied from project engineers to general managers and with industry experience of 1 year to 30+ years. All though the motivational theories that have been defined in the section 3 have been used by researchers to understand task motivation they have been used in this analysis to understand contractors' motivation in working on a NASA government contract or even just the specific project assigned to each employee.

5.1 Training and Benefit Awareness

The survey was structured in such a way that it first asked whether the company they worked for offered training, tuition assistance, and monetary incentives/recognition awards. The purpose was to see if employees are aware of all the training/benefits/incentives offered by the company. Although some of the ESCG contractors work under the teammate companies they are eligible for

the same training and incentive/awards as the Jacobs Engineering employees. The only thing that is strictly company provided is tuition assistance.

Of the thirty-nine ESCG contractors who responded to the survey, seven said that Jacobs Engineering did not offer any training. The question was, “Does your company provide formal training?” I believe that these seven ESCG contractors responded ‘NO’ perhaps because the training that is offered at ESCG is not job specific. Six other ESCG contractors responded ‘yes’ but minimal or just the mandatory training that is listed on everyone’s ESC form 122, which is not job specific. To my surprise there were only two ESCG contractors that were aware of the opportunity for employees to take off-site training.

There were also six ESCG contractors who were not aware if the company they worked for offered tuition assistance or were aware that they offered it but didn’t know what the benefit consisted of. From the responses that I received I gathered that this was mainly due to them not being interested in pursuing a higher education beyond what they already have. Therefore, it was not important for them to be informed about the availability of this benefit.

Most ESCG contractors are aware that monetary incentives and recognition awards are offered. There were only three contractors who said their companies did not offer monetary incentives or recognition awards or that they only offered recognition awards. This may be possible if they work for one of the ESC teammate contractors. However, they still may not be aware that as ESCG contractors they are eligible for all ESCG awards whether monetary or

recognition. Over all more than half of the respondents are not fully aware or are misinformed of what is offered in the ESCG.

5.2 Survey Results

There are approximately two thousand employees under the ESCG and thousands more that work for other NASA contractors. Although I only received forty-two responses to the survey I sent out to 100+ NASA contracts (most of them being ESCG employees) there was some interesting feedback. The following sections will discuss the feedback I received on whether the topics I emphasized on the survey were motivating factors or of value to NASA contractors. The last question of the survey did ask if there was anything else not mentioned in the survey that kept them motivated at work.

5.2.1 MOTIVATION FROM GOAL SETTING

The first motivation factor emphasized on the survey was Goal Setting. The results were not a surprise and as I had expected. All NASA contractors are to have each employee submit yearly Goals and Objectives per government standards and regulations. At the end of the year each employee has to do a self assessment of the goals and objectives they set. Managers then use these goals, objectives, and self-assessment to rate each employees' performance for the yearly merit raise. However, the rates are standard rates and managers are encouraged to evaluate employees in such a way that they all get a rate of or close to 3 on a scale of 0 to 5. The goal is to not give employees more than a

3% yearly merit raise. Goals and Objectives are submitted by each employee and kept by human resource in case of an audit.

After asking whether one's company required for one to set Goals and Objectives it was asked to rate the level of motivation that Goals and Objectives provided for each one on a scale of 0 to 5. Figure 1 shows the results from the survey respondents.

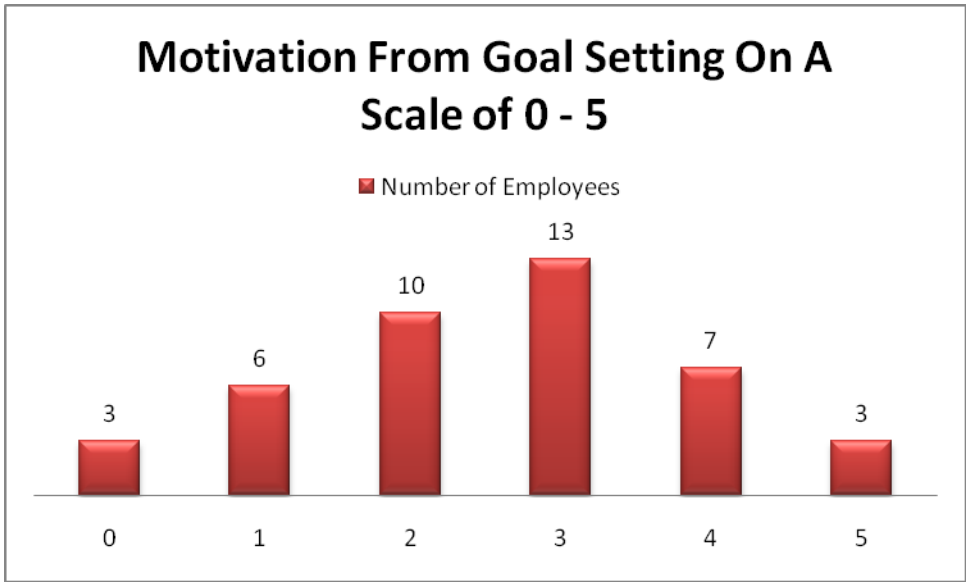


Figure 1: Goals and Objectives Results

As can be seen from Figure 1 the majority of the respondents felt an average motivation from setting Goals and Objectives. However, almost half of the total contractors who responded to the survey felt less than a 3 on a scale from 0 to 5 of motivation from setting Goals and Objectives. Besides the scale rate there were some interesting responses on how they felt about this company practice. Some felt that having to set Goals and Objectives were a burden or they found no value to them because they were the same goals and objectives every year.

Again this was of no surprise to me. My perspective of setting Goals and Objectives the first couple of years in ESCG was that they were very generic and it seemed that everyone in my group had those same generic goals and objectives. It was a surprise to me that an employee could turn in the same goals and objectives each year without managers saying anything about it. It was not until two years ago when I actually started to really think about the goals and objectives I submitted and made sure that it was something I felt I could accomplish and was not the same goal as the goal I set for myself the year before. However, after submitting the goals and objectives I do not see nor hear about them until the end of the year when it came time to do evaluations.

According to Locke and Latham's Goal Setting Theory goals must be specific and difficult in order for people to be committed to them. It is highly improbable for an employee to 1) set specific and difficult goals if they are being allowed to submit the same goals each and every year and 2) commit to them when employees do not look at or hear about them again after turning them in. Goals and objectives may not be of value to contractors perhaps because they receive no feedback from management throughout the year to see if they are on target as Locke and Latham suggest.

Per Jacobs Engineering Salary Administration document HR-2410 ESCG has a job based pay structure. The Company's policy is as follows:

> To pay salaries equal to the average salaries paid by other companies in our industry with similar jobs and within our geographic area. The basis for comparison with the external market is the midpoint, and external equity is established at the fully

> experienced grade levels. It is also the Company's policy to pay salaries that are internally equitable with regard to job worth as determined through job evaluation, and that provide equal pay for equal work regardless of race, gender, age, or disability. (HR-2410)

It is not surprising that managers just as employees do not value the practice of setting goals and objectives if the company has a job based pay structure and encourages managers to evaluate employees with the average rate as much as possible. That is perhaps the reason why employees do not commit to them nor do managers provide feedback to employees to see if they are on target. This may come with working very closely for the government where things are regulated. However, it was pleasing to see that two of the respondents who rated goal setting higher than a 3 was due to goals they set for themselves at a personal level and not necessarily company driven.

5.2.2 MOTIVATION FROM TRAINING

The second motivation factor emphasized on the survey was Training. As can be seen from Figure 2, most respondents rated the motivation they get from training as a 4 or higher.

Figure 2: Training Results

Of the twenty-five respondents who rated training a motivating factor as a 4 or above only two felt that formal training was not necessary for their position. Everyone else felt it necessary and was important to them. Six of these twenty-five respondents were contractors who stated that formal training was not provided by the ESC group or ESC teammate contractors, yet they do find training to be a motivating factor. Four respondents acknowledged that there is training, however, it is not job specific or is web-based. There was only one respondent that was aware of training out-side of the company, who rated training as motivating, but did mention that it was "only on employees own time."

Some of the reasons respondents gave for not finding training very motivating were that it was not important to them, not necessary for their position, on-the-job training was sufficient, not motivating because it's not offered; or the training that is offered is not structured from a trainee's perspective. Perhaps the

respondents who don't see it as important that a company offers training or not sees training as a regular job function that everyone must undergo.

Locke and Latham also suggest that for people to be committed and confident of the goals they set management must provide training. Managers must express confidence in employees' capabilities in order for employees to feel confident they are capable of performing well. As manager they must also provide the means of enhancing employees' capabilities. This could be done through training. From the survey result I gathered that employees do see training as motivating, however, it seemed that the majority felt that there is not any job specific training, there is not enough of it, or the training is not satisfactory. As described earlier in section 4.3, ESCG does offer training though most of it is not job specific or is web-based. However, there are opportunities for ESCG contractors to take training off-site whether it is offered through NASA or other institutions. Employees do have to go the extra mile to look for the training they believe will enhance their capabilities and convince their management and human resources that the training they are interested in taking would benefit both them and the company in order for the company to provide the funds and maybe even pay them for the time they take off from work to take the training.

5.2.3 MOTIVATION FROM TUITION ASSISTANCE

The third motivating factor emphasized in the survey was Tuition Assistance. Similar to training, tuition assistance was also a factor the majority of

the NASA contractors who responded to the survey found to be motivating. This can be seen from Figure 3 below.

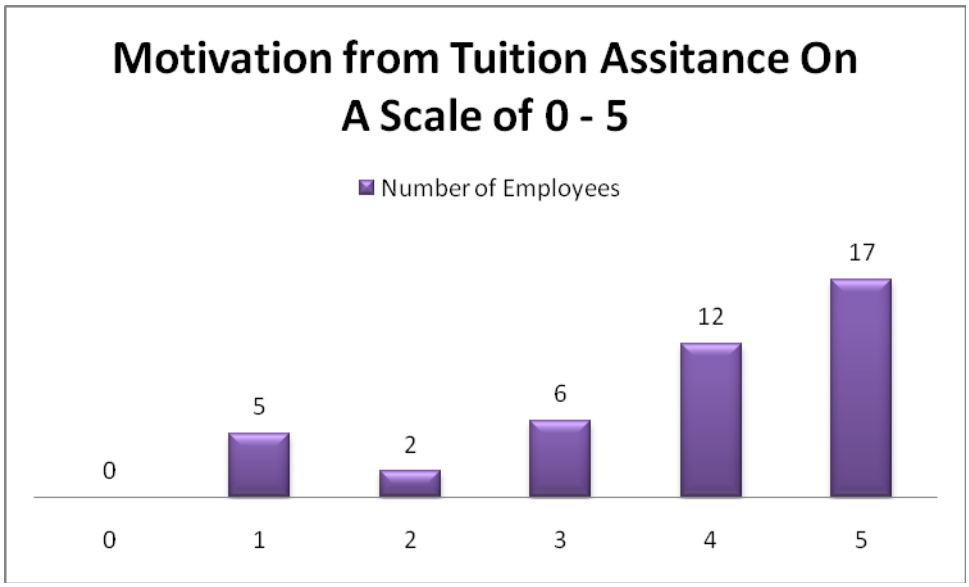


Figure 3: Tuition Assistance Results

From the survey results it seems that there is only one ESCG teammate contractor who does not offer tuition assistance. Of the thirty respondents who rated motivation from tuition assistance a four or higher, three have not or don't intend to use this benefit but find it motivating or of value that their company offers it. Ten of them are not satisfied or partly satisfied with the tuition assistance program offered by their company yet still found it a motivating factor.

There were thirteen of the forty-two respondents who rated motivation from tuition assistance as average or below average. Some of the reason for this is due to them not interested in going back to school, have all the higher education they are wanting to obtain, not satisfied with the tuition assistance package offered by their company, company does not offer tuition assistance at

all, or have not decided to go back to school and therefore, have not put much interest in this type of benefit.

Tuition assistance seems to be the benefit that the majority of employees find of value and are interested in having. However, with the current economy and college tuition sky rocketing each year it would be fair to say that $3500 a year is not very much. Just quickly pricing some graduate executive programs on-line I found that an Executive MBA at the University of Houston costs $57,500 (EMBA Tuition Cost); and an Executive MBA at the University of Texas in Houston costs $88,500 (Texas MBA at Houston – Program Details); and the MS in Engineering Management at the University of Texas costs $36K. With these costs it's understandable that employees feel that the tuition assistance offered at Jacobs Engineering is not a satisfactory package, especially if there are other companies that have far greater packages. From the survey I gathered that there are at least two companies, one of them being an ESC teammate contractor, who covers tuition at 100% and does not have to commit any time to the company after finishing. On top of that they award the employee $10K in company stock upon graduating. Granted the $10K in company stock is vested over three years for one of those two companies. However, covering tuition at 100% seems far more desirable than $3500 a year and having to stay with the company for 12 months after finishing their studies. By covering tuition at 100% I think employees would even be willing to stay with the company for 12 months.

If a company is willing to invest in their employees, employees would value that and would be willing to invest their time and dedication to that company as well.

Expectancy theory could perhaps apply to this benefit. If employees find this benefit of great value they would put more effort in their job knowing they will receive this benefit. However, the company must provide a package that employees see as valuable and worthwhile.

5.2.4 MOTIVATION FROM MONETARY INCENTIVES AND RECOGNITION AWARDS

The last motivation factor emphasized on the survey was Monetary Incentives and Recognition Awards. The ratings on this factor were not very consistent as the other motivating factors, which can be seen in Figure 4. Half of the respondents rated monetary incentives/recognition awards above average, and the half rated it average or below average.

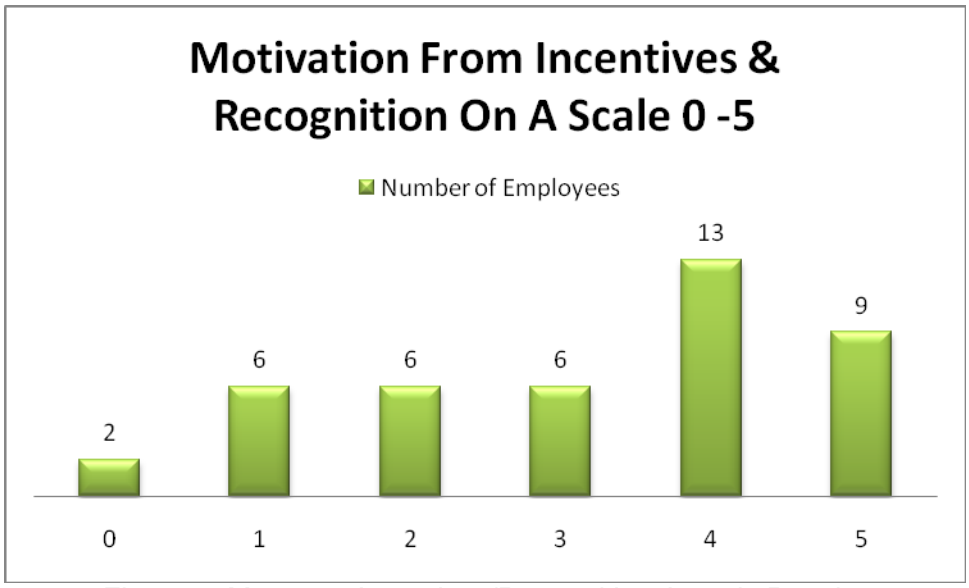


Figure 4: Monetary Incentives/Recognition Awards Results

Of the respondents who rated monetary incentives/recognition awards as highly motivating only one was not aware of the ESCG monetary incentives that are available for all ESCG contractors. There were also two respondents who found these incentives to be of no value however, still rated this factor above average. Fourteen respondents rated motivation from monetary incentives/recognition awards below average and found them of no value to them. Some of the reasons for this are because they feel that the monetary rewards have a very low value, the same incentive/rewards are given to both hard workers and not so hard workers, they are political in their issuance, they are a popularity contest, or they miss the intent which is to advocate excellence. One of the reasons given from one of the respondents was similar to one of the reasons Alfie Kohn gives in his "Why Incentive Plans Don't Work," which is that they alienate people or in Kohn's words "rewards rupture relationships" (5). Of the six respondents who rated this factor average, felt that it is sometimes nice to be recognized for a job well done but it's not necessarily the biggest factor that motivates them.

The response from this feedback goes back to Adams' Equity Theory in which people will tend to compare their output/input ratio to others. Regardless whether the respondents rated incentives/rewards as high or low it is clear that there is some motivation or lack of it due to incentives/rewards being issued by ESCG. As proposition I of the Equity Theory states, people are selfish and will try to maximize their output. Therefore, it's clear that if employees are not

maximizing their outcomes, outcomes being monetary incentives or recognition awards, they are not going to put much attention or effort in that particular type of outcome. When it comes to the issuance of these incentives/rewards employees are comparing themselves to all the other employees in the contract and the inputs from their particular tasks. In doing this employees feel that the incentives or rewards are of no or low value because they are given to people with low inputs, for instance if it's given to an administrator who inputs data in a system all day. There is also the instance when employees find it inequitable when one who is working on an average project gets an incentive or reward as oppose to employees who are working on high profile projects.

Due to the industry we work in, where there are regulations, it is difficult for employees to make changes in their inputs/outputs if they feel there is inequity. An example of this is the award fee mentioned in section 4.5. It is no surprise that ESCG contractors do not get excited or find this award fee motivating. One reason for this is that they find the value of it to be very low. As mentioned earlier, employees are not expected to get more than $500 per award period. Of the four years that Jacobs Engineering has held the ESC the most an award fee amount has been is $198, which has been one time. Fees for past periods have been from $20 to $50. Second, all employees are issued the same amount from the award fee regardless of their position or performance. Employees can work for a certain matrix group who was the cause for having a part of the contract evaluation score to be lower or they can be working for the

project group that performed exceptionally which bumped up the contract's evaluation score, yet employees from both groups will get the same amount of the award fee.

5.2.5 OTHER MOTIVATING FACTORS

The survey ended with the question, 'Is there anything else not mentioned in the survey that motivates you?' There were so many different responses to this question. Some of those responses were family, technical challenge, career advancement or professional development, good management, and having a job during this time where that economy is not at its' best. There were a couple of motivating factors that came up more frequently among the respondents.

One of those motivating factors is just personal philosophy to do their best. People have a personal goal to do their best and provide quality work. Perhaps it's a sense of self-accomplishment that they find of value or rewarding and therefore are motivated to perform their job to the best of their ability or give it their 100%.

Another motivating factor is co-workers. Employees do not want to let their co-workers down. They are aware that a lot of the work that needs to be completed is team work. Therefore, employees are motivated to do their best at work so that someone else in their team will not have to pick up the slack. As mentioned in proposition IIA and IIB of Adam's Equity Theory, people will initially set what's equitable or not and if anyone in the team causes for there to be inequity they will be punished. Working in this industry there is a lot of team work

and employees do not want to be the cause for any inequity, therefore, they will strive to do a good job.

There is also interesting project of high quality and value that motivates NASA contractor. This can be explained from Vroom's expectancy theory. Employees are going to put high effort in the work that they do to build a good reputation of being a dependable, hard worker. This could lead them to being selected to work on high profile projects that are of high value to NASA and the space industry. That is what they value the most, being a part of a project that is important or makes a difference in this industry.

The last motivating factor that was frequently mentioned was the "Wow" factor of working in the space industry for NASA. I was not surprised to see this as a motivating factor as that is how many of us in this industry feel when we first start our employment with the industry. However, it was surprising that some of it came from contractors who have been with the industry for 20+ years who most like have already seen not just the good perks of the industry but also the not so great ones. It's pleasing to know that it still does motivate contactors after many years of service to this industry.

6 RECOMMENDATIONS

It is inevitable that as a NASA contractor company there are many things that cannot be changed due to government standards and regulations. However, there are aspects of the company that can be changed so that motivation among employees is increased. Jacobs Engineering and/or ESCG have the right benefits to keep their employees motivated, it's the structure or awareness of the benefits that perhaps can be modified.

Any ESCG contractor can argue that there is no purpose or motivation from setting Goals and Objectives but if by government standards and regulations each employee must submit them each year, why not make them work. Yes it's true that the contract is structured in such a way that it is job based pay with pay grades and company's objective is to keep employees' pay rate in the middle of the pay grade, however, management could still use the Goals and Objectives to get commitment from employees in their teams. Managers could perhaps pay closer attention to what's being turned in and actually sit with each employee to go over the Goals and Objectives each employee has set. In doing this employees may actually take this practice more seriously and not turn the same goals and objectives every year. As Locke and Latham suggest, managers should give feedback as well. This should be done throughout the year, not just at the end when evaluations have to be turned in for the yearly merit raise. If upper management takes this practice a bit more seriously I believe employees will do the same.

Due to many matrix organizations under one contract, it would be difficult to try to have formal training for each and every position. The structure of the available training at ESCG may be fine. However, it was surprising to see that many of the contractors who responded to the survey were not aware of the possibility of getting training outside of the company. It is well worth the hassle for employees to go search for the proper training themselves if it is going to help them perform better in the work place and at the same time make them more marketable. One thing that the company can do is to advocate or better advertise this opportunity to make each and every employee on the contract aware.

Tuition assistance was one of the biggest motivators for NASA contractors and rightfully so. Everyone for the most part is going to have a sense of bettering themselves. Pursuing a higher education beyond undergraduate school or even a certification program would be a great way of feeling a sense of improvement. Not only would one get that sense but it would also make them more marketable. It was disturbing to see how low in value the tuition assistance package offered by Jacobs Engineering compared to some of the other NASA contractors. It's understandable if a small business is not able to cover employees' tuition at 100%. Jacobs Engineering is a large company though, large enough to take on a cost-plus-award-fee government contract. I believe they can do better than only providing $3500 a year for tuition assistance. If this is a benefit that highly motivates contractors I would suggest that Jacobs Engineering re-evaluate their

tuition assistance package. They could even possibly get more commitment from employees if they are willing to invest in their future.

Lastly there are incentives and awards. It's difficult for a company to provide large value monetary incentives for providing government work. In the end people will always compare themselves to their colleagues and find situations where there is inequity. The monetary incentive and recognition awards offered by ESCG are all based on nominations from other employees. There is really not much re-structuring available for this benefit. Employees who are motivated by this benefit should continue to try to obtain them and for those who are not interested, motivated by them, or find them to be of low value should not put any effort in being awarded with this type of benefit as they have been.

Appendix A

Table 2: Jacobs Technology Exempt (Professional) Standard Labor Category Chart[1]

Standard Labor Category	SLC Minimum Qualifications	Jacobs Technology Inc. Job Classification
Program Manager	Typically requires a bachelor's degree and nominally possesses 10 years of experience.	Manager V
Manager	Typically requires a bachelor's degree and nominally possesses 5 years of experience.	Manager IV
		Manager III
		Manager II
		Manager I
Supervisor	Typically requires a bachelor's degree in area of specialty.	Supervisor VII
		Supervisor VI
		Supervisor V
		Supervisor III
		Supervisor II
		Supervisor I
Scientist 1	Bachelor degree is required.	Science Professional II
		Science Professional I
Scientist 2	BS degree and a minimum of 5 years are required.	Sr. Science Professional I
		Science Professional IV
		Science Professional III
Scientist 3	BS degree & a min of 10 yrs are required	Sr. Science Professional II
Scientist 4	BS degree & a min of 15 yrs are required	Sr. Science Professional Specialist
Engineer 1	Requires a bachelor's degree in engineering and minimum of 0 years of experience.	Engineer III
		Engineer II
		Engineer I
Engineer 2	Requires a bachelor's degree in engineering and minimum of 5 years of experience.	Engineer IV
		Sr. Engineer I
Engineer 3	Requires a bachelor's degree in engineering and minimum of 10 years of experience.	Sr. Engineer II
Engineer 4	Requires a bachelor's degree in engineering and minimum of 15 years of experience.	Engineering Specialist
Senior Engineer Specialist	Requires a bachelor's degree in engineering and minimum of 15 years of experience.	Sr. Engineering Specialist

[1] Jacobs Engineering Proprietary Information

Table 3: Jacobs Technology Exempt (Professional) Standard Labor Category Chart[2]

Standard Labor Category	SLC Minimum Qualifications	Jacobs Technology Inc. Job Classification
IT1	Typically requires a bachelor's degree in a related area of experience in the field.	Systems Analyst I
		Systems Analyst II
		Systems Analyst III
IT2	Typically requires a bachelor's degree in a related area of experience in the field and a minimum of 5 years of experience.	Systems Analyst IV
		Sr. Systems Analyst I
IT3	Typically requires a bachelor's degree in a related area of experience in the field and a minimum of 10 years of experience	Sr. Systems Analyst II
IT4	Typically requires a bachelor's degree in a related area of experience in the field and a minimum of 15 years of experience	Systems Analyst Specialist
Software Quality Assurance Engineer I	Requires Bachelor Degree in Engineering, Mathematics, or Computer Science. A minimum of 3+ years related working experience is required	Engineer III
Software Quality Assurance Engineer II	Requires bachelor's degree in Engineering, Mathematics, Computer Science related field. Requires 5+ years of related experience.	Engineer IV
Software Quality Assurance Manager	Requires a bachelor's degree in Engineering, Mathematics, Computer Science, related field or equivalent work experience. Typically requires 7+ yrs of related experience including experience in software/hardware integration and life cycle testing coding experience in a higher level programming language like C, C++, Java and must be familiar with NT, UNIX, and/or Solaris environment.	Sr. Engineer I
		Sr. Engineer II

[2] Jacobs Engineering Proprietary Information

Appendix B

Table 4: Award Fee Evaluation Factors

Award Fee Evaluation Factors
Trend of Assigned Weights (in Percent)

Evaluation Factors	Period 1 Oct 96 - Mar 97	Period 2 Apr 97 - Sep 97	Period 3 Oct 97 - Mar 98	Evaluation Factors Consolidated	Period 4 Apr 98 - Sep 98	Period 5 Oct 98 - Mar 99	Period 6 Apr 99 - Sep 99	Period 7 Oct 99 - Mar 00	Evaluation Factors Added or Consolidated	Period 8 Apr 00 - Sep 00	Period 9 Oct 00 - Mar 01	Period 10 Apr 01 - Sep 01	Period 11 Oct 01 - Mar 02	Evaluation Factors Added or Consolidated	Period 12 Apr 02 - Sep 02	Period 13 Oct 02 - Mar 03	Period 14 Apr 03 - Sep 03
Management Effectiveness	25	25	25		25	25	25	25	Management Effectiveness and Cost	5	25	25	25	Management Effectiveness and Subcontract Management and Cost	35	35	35
Cost	5	5	5		5	5	5	5									
[redacted]									Subcontract Management and Performance	30	20	20	20				
Operational Safety	20	20	20		20	20	20	20	Operational Safety and Quality	15	15	15	15	Operational Safety	20	20	20
Quality	20	20	20		20	15	15	15						Quality	15	15	15
Schedule	5	5	5	Schedule and Manifest Effectiveness	10	10	10	10	Schedule and Manifest Effectiveness and Support	5	5	5	5		15	15	15
Manifest Effectiveness	5	5	5														
Supportability	5	5	5		5	10	10	10									
[redacted]									Kennedy Ground Operations	30	20	20	20	[redacted]			
SB/SDB/WOSB*	15	15	15		15	15	15	15		15	15	15	15		15	15	15
Total	100	100	100		100	100	100	100		100	100	100	100		100	100	100

Fee Determination Official	*George W.S. Abbey*	*Roy S. Estess*	*Brock R. Stone*	*Michael C. Kostelnik*
Contracting Officer	*Jeff Cullen*	*Herb Baker*		

*Small/Small Disadvantaged/Woman Owned Small Business (SB/SDB/WOSB)

Appendix C

Table 5: Performance Evaluation Board Contact Evaluation Schedule

Action	(Workdays)
1. PEB Chair and members appointed.	_____ days prior to first period
2. PEB Chair appoints performance monitors and informs contractor.	_____days prior to first period
3. Monitors receive orientation and guidance.	_____days prior to first period
4. Monitors assess performance and discuss results with contractor.	Ongoing after start of period
5. Monitors submit Performance Monitor Reports to PEB.	Last day of each _____ [insert month, quarter, etc.]
6. PEB considers Performance Monitor Reports and other requested performance information.	Ongoing
7. PEB discusses overall performance with contractor during period.	_____ days after end of period of each _____ [insert month, quarter, etc.]
8. PEB meets and summarizes preliminary findings and position of PEBR.	_____ days after end of period
9. PEB may meet with contractor to discuss preliminary findings and position.	_____ days after end of period
10. PEB establishes findings and recommendations for PEBR.	_____ days after end of period
11. PEB Chair submits PEBR to FDO.	_____ days after end of period
12. FDO considers PEBR and discusses with PEB, as appropriate.	_____days after end of period
13. FDO sends PEBR to contractor.	NLT 45 days after end of period
14. Payment made to contractor based on contract modification.	NLT 60 days after end of period

Appendix D: Survey

The University of Texas at Austin
ENM 398R Engineering Management Report
Survey for Master's Report
Given by: Yadira Garcia
***The following survey is for statistical purposes and will be used for my Master's Report, which will be published at the UT Library System. The information will not be shared with anyone else.

1) What company do you work for?
2) What is your job title?
3) How long have you been working in the space industry?

- Goal Setting
  4) Does your company require you to set Goals & Objectives?

  (Rate the level of motivation Goal Setting provides to you)
  5) No Motivation 1…2…3…4…5 Extremely Motivating
- Training
  6) Does your company provide formal training?
  7) Do you feel formal training is necessary for your position?
  8) Is having formal training or lack thereof important to you?

  (Rate the level of motivation Training provides to you)
  9) No Motivation 1…2…3…4…5 Extremely Motivating
- College Tuition Assistance
  10) Does your company offer tuition assistance?
  11) If so, is the tuition assistance program they offer a satisfactory one?
  12) Is it important or does it add any value that your company provides a tuition assistance program?

  (Rate the level of motivation Tuition Assistance provides to you)
  13) No Motivation 1…2…3…4…5 Extremely Motivating
- Monetary Incentives & Recognition
  14) Does your company offer any monetary incentives and/or recognition awards?
  15) If so, do they add any value to you personally/professionally?

  (Rate the level of motivation Monetary Incentives/Recognition provides to you)
  16) No Motivation 1…2…3…4…5 Extremely Motivating

17) Is there anything else not mentioned in this survey that keeps you motivated at work?

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Vita

Yadira Garcia was born in Houston, Texas on April 26, 1977, the daughter of Juana Garcia Rodriguez and Jose Luis Garcia DeLeon. After completing her work at Bellaire High School, Bellaire, Texas, in 1995, she attended Houston Community College System to complete the Texas Core Curriculum courses. In Fall of 2000 she was admitted to the College of Engineering at The University of Texas at Austin. She received her Bachelor of Science in Aerospace Engineering in December, 2004. Upon completing undergraduate school she accepted employment as a Project Engineer with Jacobs Engineering under a NASA contract. In August, 2007, she entered Graduate School at The University of Texas at Austin

Permanent address: 4811 Glenridge
Houston, TX 77053

This report was typed by Yadira Garcia.